



Australian Bureau of Statistics

6102.0 - Labour Statistics: Concepts, Sources and Methods, 2001

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INTRODUCTION

18.1 The Australian Bureau of Statistics conducted the first Australian Census of Population and Housing in 1911. It was followed by others in 1921, 1933, 1947 and 1954. Following the 1961 Census, a census has been taken every five years. In 1977 an amendment was made to the Census and Statistics Act requiring that "the census shall be taken in 1981 and in every fifth year thereafter, and at such other times as prescribed".

18.2 The objectives of the census are threefold. They are:

- to provide information to allow the determination of electoral boundaries;
- to provide information for planning and the disbursement of government funding; and
- to provide data for the construction of a master frame for a wide variety of household surveys.

CENSUS OUTPUT

18.3 Estimates from the 1996 Census were released in two phases, and a similar approach is proposed for the 2001 Census. For the 1996 Census, most data (approximately 80%) were released approximately 11 months after the census was conducted, with the remaining data released within the following twelve months. A number of products are used to release data from the census. These include:

- Community profiles - sets of tables containing key census characteristics of persons, families, households and dwellings, covering most topics on the census forms. Community profiles are available in a number of electronic formats and in hard copy.
- Basic community profiles - sets of tables available for all standard census geographic areas from census collection districts (CDs) to total Australia. Basic community profiles are the standard census product from which most other standard products are created. The data content of the profiles is reviewed with each census.
- Other community profiles - a range of thematic profiles providing a standard set of two or three dimensional tables on such aspects as ethnicity, families, older persons, young people, usual residents, and the working population.
- Publications - census publications provide easily accessible and basic census information to many users. Three types of publications are available: 'statistical' which contain tables with some descriptive commentary; 'thematic' which present data on a particular theme with a significant amount of analysis and commentary; and 'State/Territory-specific' which

contain information of local interest.

The 'Selected Characteristics' series, and the 'Social Atlases' are examples of census publications. The Selected Characteristics series provides census counts for small areas (SLAs¹), and has been produced in a similar format since 1911. The series includes, for each SLA, data on selected social and housing characteristics, educational and labour force characteristics, and urban centre and localities characteristics. The Social Atlases give a geographic perspective on the characteristics of the population.

1. SLAs (Statistical Local Areas) are spatial units used to disseminate statistics from the census. They comprise one or more census collection districts (see below) and, in aggregate, they cover the whole of Australia without gaps or overlaps. For further information, see paragraph 15.41.

- Socio-economic Indexes for Areas (SEIFA) - these indexes are summary measures derived from Census data to reflect differences in socio-economic conditions across geographic areas. The indexes are compiled for all standard geographic areas from CD to State/Territory.
- CDATA - a CD-ROM product containing census data, and desktop mapping and analysis software.
- Household Sample File - a sample file containing a one per cent sample of unidentifiable records for private dwellings and associated persons, and for persons in special dwellings.

18.4 The census collects data on a range of topics. The criteria used to select topics for inclusion on the census form are outlined below (paragraph 18.7). The 2001 Census will collect information on the following topics:

Socio-demographic information	Sex, age, relationship in household, marital status, usual residence on census night, usual residence one year ago, usual residence five years ago, religion, Australian citizenship, birthplace, year of arrival in Australia, Aboriginal or Torres Strait Islander origin, father's birthplace, mother's birthplace, language spoken at home, English proficiency, education, age left school, qualifications, and ancestry.
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Labour-related information	Labour force status and income. For employed persons, information will also be collected on status in employment, occupation, and journey to work. For unemployed persons, information will be collected on whether looking for full-time or part-time work.
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SCOPE AND COVERAGE

18.5 The census aims to enumerate all persons residing in Australia on census night. The census is undertaken on a 'de facto' residence rather than 'de jure' residence basis: i.e. it is based on location on census night rather than on a usual residence basis.

18.6 Persons residing in the external territories of Cocos (Keeling) Islands and Christmas Island were included in the census for the first time in 1996. Persons enumerated in the census include almost all persons in Australia on census night, whether temporary or permanent residents. The only exceptions are diplomatic personnel of other nations resident in Australia. By definition it also excludes Australian residents temporarily overseas.

CONTENT

18.7 Topics for inclusion in the census must meet the following criteria:

- the topic is of major national importance and in accordance with the objectives of the census; and
- there is a defined need for data on the topic for small groups in the population or for small geographic areas. Otherwise, the need could be satisfied from a household survey; and
- the topic is suitable for self-enumeration and meets sensitivity and privacy constraints.

18.8 Prior to a census there is considerable consultation with clients. Client consultation for the 2001 Census was initiated by the release of **Information Paper 2001 Census: ABS Views on Content and Procedures** (Cat. no. 2007.0). This paper described the proposed topics to be included and for which the ABS was seeking further views. It was widely distributed and its availability widely advertised.

18.9 On receipt of submissions, a series of consultative meetings are held, culminating in seeking advice from the Australian Statistics Advisory Council. A report of the final recommendations is then prepared for approval by Cabinet.

18.10 Since the first national census in 1911, the content of censuses has changed. Some topics have been included in each census since 1911, for example age, marital status and religion, while others have been included or excluded depending on the importance of the topic at the time. For information on topics included in each census held from 1911 to 2001, see **How Australia Takes a Census** (Cat. no. 2903.0).

COLLECTION METHODOLOGY

18.11 The census is self-enumerated. Forms and information booklets are distributed by census collectors to every household in Australia prior to census night. The completed forms are then collected in the week or so following census night. The conduct of the census is complex. Various aspects of the collection methodology are discussed below. For more detail see **How Australia Takes a Census** (Cat. no. 2903.0).

CENSUS NIGHT

18.12 The date the census is conducted is carefully chosen. Recent censuses have been conducted in August, the month in which the least population displacement occurs. The day of the census varies, and is chosen to avoid school and other major holidays.

COLLECTION MANAGEMENT

18.13 A hierarchical structure of temporary staff is used to deliver and collect census forms. All staff are appointed under the **Census and Statistics Act 1905** and are subject to the strict confidentiality provisions of the Act.

18.14 ABS State and Territory Offices are responsible for the management of all field staff in their

State or Territory. The majority of the workforce, just under 28,000 people, are the census collectors. These deliver a Census Form and Census Guide to every household in their collection district² prior to census night. They are also responsible for collecting forms following Census night.

2. The collection district (CD) is the basic geographic unit of collection. A CD is generally a census workload area that one Collector can cover, delivering and collecting census forms in a specified period. For further information see paragraph 15.41.

18.15 As the census is self-enumerated, there is a heavy reliance on the ability of respondents to correctly interpret questions and to answer in the desired manner with the appropriate amount of detail. Collectors are encouraged to make contact with householders, since a high level of householder contact contributes to high response and a low under-enumeration rate. On receipt of the census forms from householders, census collectors are instructed to briefly scan them to ensure that they have been completed.

18.16 In total, more than 32,000 temporary field and collection staff will be involved in the delivery and collection of forms from the 2001 census. These staff need to be recruited, trained, supplied with material, supervised and paid on completion of their work. The development and logistics behind the census are enormous and require careful planning and implementation.

FORM DESIGN AND TESTING

18.17 A program of tests is conducted before each census to decide on the layout and question wording for the census form. A series of seven tests, including a dress rehearsal, was undertaken for the 2001 Census to make the forms as easy as possible for respondents to complete.

18.18 In addition, considerable consultation takes place among a variety of work groups within the ABS to ensure that:

- the team responsible for the development of the processing system is satisfied with the positioning of response areas on the form and the way they are delineated;
- the field operation team is satisfied with the proposed form from the perspective of training the collection workforce; and
- the output team can satisfactorily use the reported data on the form as input to the compilation of specified output for publication.

PUBLIC RELATIONS

18.19 Significant investment is made in public communication and media relations activities. Specialist staff are employed for the census collection period, and an advertising campaign prior to the census indicates the importance of the census and how the community is expected to cooperate to ensure its success.

18.20 Public figures are recruited to lend their support to the Census. In 1996, Census day was the day after the closing of the Atlanta Olympic Games. The opportunity was taken to have the anchorman of the Olympic telecast make a brief statement supporting the census each evening.

PROCESSING OF CENSUS FORMS

18.21 A special Census Data Processing Centre is set up each census with the specific task of processing the completed census forms as quickly as possible and thereby achieving the timely release of results.

18.22 Completed census forms are examined for completeness and consistency. Write-in responses on family, qualification and occupation are coded to the appropriate classification categories.

18.23 In the case of partial non-response, imputation is undertaken for sex, age, geographic area of usual residence and marital status in accordance with predefined algorithms. The remaining data items are set to 'not stated' unless other information exists which allows the determination of Aboriginal/Torres Strait Islander origin and Labour Force Status.

QUALITY CONTROL

18.24 As with other statistical collections, the ABS is concerned to see that high quality data are obtained from the census. To this end, extensive effort is put into the form design, collection procedures, public awareness campaign and accurate processing of the information collected.

Field testing

18.25 The method employed to obtain information in the census involves 'self-enumeration' in which each household is asked to complete the census form with relatively little assistance from the census collector. To make sure that this approach is successful, a series of tests³ is conducted before each census to gauge public reaction to the form and the questions it contains.
3. For further information see paragraph 18.17 above.

Public awareness

18.26 As well as making sure that the right questions are asked, it is essential for the achievement of quality census data that everyone understands the importance of being counted and of giving the right answers in the census. A crucial factor in this respect is the public awareness campaign, discussed above in paragraph 18.19.

Quality assurance

18.27 Once the forms are in the Census Data Processing Centre, quality assurance procedures are implemented at all phases of processing to maximise the accurate recording of information collected and to eliminate as far as possible any inconsistencies in coding responses. Coding procedures, indexes, processing systems and training of staff are the key areas where changes can lead to improved data quality during processing.

Residual errors

18.28 The census, like all statistical collections, is subject to a number of sources of non-sampling error⁴. However, testing has indicated that the effect of these errors is generally slight, although it could be more significant for analyses of data for small groups, or for very detailed cross classifications.

4. The Census of Population and Housing, like other types of fully enumerated collections, is not subject to sampling error - see Chapter 16 for further information.

18.29 The four most significant sources of non-sampling error for the census are: undercounting; partial response; respondent error; and processing error. These are discussed further below.

Undercounting

18.30 Despite efforts to obtain full coverage of people and dwellings, it is inevitable that a small number of people will be missed and some will be counted more than once. In Australia more people are missed from the census than are counted more than once. The net effect when both factors are taken into account is referred to as undercounting.

18.31 As well as affecting the total population counts, undercounting can bias other census statistics because the characteristics of missed people are different from those of counted people. In Australia, rates of undercounting vary significantly for different population groups depending on factors such as age, sex and geographic area. A measure of the extent of undercoverage is obtained from a sample survey of households undertaken shortly after the census, called the Post Enumeration Survey. Undercounting of people in the 1996 Census was estimated to be 1.6% for Australia as a whole.

Partial response

18.32 People who are counted in the census do not necessarily answer all the questions which apply to them. While questions of a sensitive nature are generally excluded from the census, all topics have an element of non-response. However, this element can be measured and is generally low. In those instances where a response is not provided, a 'not stated' code is allocated, with the exception of non-response to age, sex, marital status and the statistical local area of usual residence. As these data are used in population estimates, these variables are imputed, using other information reported on the census form and specially constructed random tables based on the distribution of the population according to these variables at the previous census.

Respondent error

18.33 Most occurrences of respondent error are detected and corrected during editing. However, such procedures cannot detect and correct all errors, and some remain in the final output.

Processing error

18.34 Errors created during the processing of the census are kept at an acceptable level by means of quality assurance procedures. These involve sample checking during coding operations, and taking corrective action where necessary.

Evaluating the outcome

18.35 After the census, an evaluation of the data is carried out to inform users about their quality, and to help plan the next census. Evaluation includes investigation into the effects of partial response, consistency checks between related questions, and comparisons with data from other sources. Much of the information gathered about the quality of census data is distributed in the form of commentary contained in census products or in published working papers reporting on the evaluation of census data quality.

Introduced random adjustments

18.36 Minor adjustments are made to the information to allow the maximum detailed census data possible to be released without breaching the confidentiality of data reported by individual respondents. For this reason, great care should be taken when interpreting data in small cells, since possible respondent and processing errors have a greater proportional impact on them than on larger cells.

RELIABILITY OF THE ESTIMATES

18.37 Estimates from the census are subject to non-sampling error. For further information see paragraph 18.29 above.

DATA COMPARABILITY OVER TIME

18.38 In order to provide a high degree of consistency and comparability over time, changes are made as infrequently as possible to collection methods, collection concepts, data item definitions, frequency of collection, and analysis methods.

18.39 Table 18.1 shows the major changes to the labour-related data items in the census over its history.

18.1 MAJOR CHANGES TO LABOUR-RELATED DATA ITEMS IN THE CENSUS OF POPULATION AND HOUSING

CENSUS	EVENT
1911	Census was established by the Census and Statistics Act 1905, and conducted in April. Labour-related items included: labour force status; unemployment duration; occupation; and industry.
1921	. Census was conducted in April. Labour-related data item added: cause of unemployment.
1933	. Census was delayed as a result of the economic depression, and moved to June. Labour-related items collected in the 1933 Census were the same as those collected in the 1921 Census.
1947	. Census was delayed as a result of World War II, and conducted in June. Labour-related items collected in the 1947 Census were the same as those collected in the 1933 Census.
1954	. Census conducted in June. Labour-related data item changes: industry - place of work also asked.
1961	. Census conducted in June, and the frequency increased to five-yearly intervals. Labour-related data items collected in the 1961 Census were the same as those collected in the 1954 Census.
1966	. Census conducted in June. Labour-related data items added: hours worked. Labour-related data items dropped: unemployment duration and cause of unemployment. Data released on microfiche for the first time.
1971	. Census conducted in June. Labour-related data items added: journey to work - collected by coding address of usual residence and address of workplace to obtain origins and destinations of travel to work. Labour-related data item changes: hours worked - question focused on hours worked in all jobs held in the week prior to the census. ASIC introduced for industry coding.
1976	. Census conducted in June. Labour-related data items added: mode of travel to work.
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1977	Census and Statistics Act amended to require censuses at five-yearly intervals 'and at such other times as prescribed.'
1981	. Census conducted in June. Labour-related data items changed: labour force status - Since 1981 respondents are required to answer a series of questions from which labour force status is coded; hours worked in main job - replaced hours worked in all jobs.
1986	. Census conducted in June. Labour-related data item changes: occupation - an additional question on main tasks or duties performed in the job has been asked since 1986
1991	. Census moved to early August after all mainland States changed from three school terms to four school terms, with holidays around the end of June. Labour-related data items the same as in 1986.
1996	. Census conducted in August. Labour-related data items added: availability to start work - to achieve comparability with Labour Force Survey definition of unemployment. Labour-related data item changes: hours worked in all jobs - replaced hours worked in main job. Two stage release approach introduced, with users gaining access to a wide range of first release Census data within 12 months, and the second release data released progressively from that time.
2001	. Census conducted in August. Two stage release approach expanded, with more data items available as part of the first release. Introduction of intelligent character recognition, automatic coding and the use of images rather than paper forms during processing. Option to have personal details retained and made publicly available after 99 years.

FURTHER INFORMATION

18.40 For further details, contact the Assistant Director, Population Census Development and Evaluation, on Canberra (02) 6252 5942.

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